

**US COERCION IN A WORLD OF PROLIFERATING  
AND VARIED WMD CAPABILITIES:**

**FINAL REPORT FOR THE PROJECT ON DETERRENCE  
AND COOPERATION IN A MULTI-TIERED NUCLEAR  
WORLD**



**A STUDY FOR  
THE DEFENSE THREAT REDUCTION AGENCY  
ADVANCED SYSTEMS AND CONCEPTS OFFICE**

**FEBRUARY 2001**

***DFI INTERNATIONAL/SPARTA, Inc***

US COERCION IN A WORLD OF PROLIFERATING AND VARIED WMD CAPABILITIES:  
FINAL REPORT FOR THE PROJECT ON DETERRENCE AND COOPERATION IN A MULTI-TIERED NUCLEAR  
WORLD

SPONSOR:                      Defense Threat Reduction Agency  
                                    Dr. Jay Davis, Director

Advanced Systems and Concepts Office  
Dr. Randall S. Murch, Director

BACKGROUND: The Defense Threat Reduction Agency (DTRA) was founded in 1998 to integrate and focus the capabilities of the Department of Defense (DoD) that address the weapons of mass destruction (WMD) threat. To assist the agency in its primary mission, the Advanced Systems and Concepts Office (ASCO) develops and maintains an evolving analytical vision of necessary and sufficient capabilities to protect United States and Allied forces and citizens from WMD attack. ASCO is also charged by DoD and by the US Government, generally, to identify gaps in these capabilities and initiate programs to fill them. It also provides support to the Threat Reduction Advisory Committee (TRAC), and its Panels, with timely, high quality research.

ASCO ANALYTICAL SUPPORT: DFI International and SPARTA, Inc. have provided analytical support to DTRA since 1999 through a series of projects on nuclear, chemical, and biological issues. This work was performed for DTRA under contract DTRA01-00-D-0001.

SUPERVISING PROJECT OFFICER: Dr. Anthony Fainberg, Chief, Advanced Concepts Division, DTRA/ASCO, (703) 767-5709.

© 2001 DFI INTERNATIONAL: 1717 Pennsylvania Avenue, NW, Washington, DC, 20006. Telephone: (202) 452-6900; Facsimile (202) 452-6913; Internet: [www.dfi-intl.com](http://www.dfi-intl.com). Project Coordinator: Matthew Travis, Senior Associate, (202) 452-6972.

DISCLAIMER: The views, opinions, and findings contained in this report are those of DFI International and SPARTA, Inc., and should not be construed as an official US Government position, policy, or decision, unless so designated by other documentation.

## INTRODUCTION

Understanding and responding to the challenge of adversaries armed with weapons of mass destruction (WMD) will be critical for the United States to achieve its national security objectives in the 21<sup>st</sup> century. The growing proliferation of WMD, added to potential threats embodied in states with established WMD capabilities, suggests that the US will increasingly find itself trying to deal with a diverse array of adversaries armed with WMD. Whether armed with a large and diverse WMD arsenal or possessing a nascent WMD capability, states regard these weapons as critically important for resisting American pressures. If the United States cannot effectively address these WMD challenges, American influence will be sharply constrained and its interests could be dangerously threatened.

This report examines the WMD challenge to US coercion potential and identifies ways for the US to respond to it. The subsequent discussion represents the culmination of a seven-month study conducted by DFI International and SPARTA, Inc. for the Defense Threat Reduction Agency's Advanced Systems and Concepts Office (DTRA/ASCO). The report begins with a short discussion of the methodology employed, followed by a brief examination of the WMD challenge. Then, it shifts to the first main section – a systematic consideration of how coercion works. The second major section evaluates the effects of adversary WMD-possession on the “coercion dynamic.” Beyond this general assessment, evaluations were made in the study on four geographic regions of concern with burgeoning WMD capabilities: the Middle East (North Africa

and the Levant), the Persian Gulf (Southwest Asia), South Asia, and East Asia.<sup>1</sup> The final section considers differing strategic approaches (including declaratory policies, and force structure modifications) that offer responses to adversary WMD. The report concludes with a recommended course of action and general observations.

## **METHODOLOGY**

The study team employed a three-step methodology to examine the challenge of WMD-armed adversaries for US coercion: (1) develop an underlying understanding of how coercion works, (2) evaluate how adversary possession of WMD changes US coercion potential, and (3) identify ways for the US to respond effectively to this challenge and enhance coercion potential. Given the limited number of clear-cut cases in which the US has attempted coercion of adversaries with small or nascent WMD capabilities, the project team used a wide array of other tools to inform its analysis for this project. They included a thorough review of germane theoretical literature, case studies of specific coercion attempts, a broader review of historical uses of WMD, interviews with international security and regional experts, and deductive conceptualization of how coercion works in general and with WMD present. The remainder of this section provides greater detail on the conduct of each step in the project methodology.

In Step 1, the project team sought to gain a solid understanding how coercion works in general. Such a background is essential to evaluate the effects of WMD

---

<sup>1</sup> Although the Middle East (North Africa plus the Levant [Israel, Lebanon, Jordan, and Syria]) and the Persian Gulf regions (the Arabian Peninsula states plus Iran and Iraq) are often lumped together as a single area known as the Middle East, in this project they have been treated separately because of significant differences in the recent history of US military involvement and perception of American interests at stake.

proliferation on the process. First, the project team compiled a bibliography for works in the following coercion-related categories:

general deterrence; nuclear deterrence; conventional deterrence; compellence; deterrence and defense; regional security (Middle East, Persian Gulf, South Asia, and East Asia); strategic culture; and the epistemology and methodology in the study of coercion.<sup>2</sup>

The most germane works were explored in detail. In pursuit of a deeper understanding of how past US coercion attempts have unfolded, the project team then conducted a series of structured-focused case studies.<sup>3</sup> The project team primarily selected cases of attempts by a nuclear-armed US to compel or deter states lacking any WMD:

USSR in the Berlin Crisis (1948), North Korea and China in the Korean War (1950-53), China in the Nationalist Chinese Islands Crisis (1954-58), and India in the India-Pakistan War (1971).

Within some of these cases, multiple coercion attempts occurred expanding the number of available observations. A fifth case study, Iraq in the Persian Gulf Crisis (1990-91), was chosen even though Iraq had biological weapons (BW) and chemical weapons (CW). The project team included this crisis because of its recent occurrence and strong legacy for coercion in the post-Cold War era.

Incorporating information from the literature review and case studies, the project team conceptualized how the coercion process works. This effort involved consideration of both the asserting state's threat as well as the perception and response of the target state to that threat. The resulting "coercion dynamic" breaks down the process into its

---

<sup>2</sup> The project team compiled a bibliography of works from these categories. It is a part of the study's full report.

<sup>3</sup> See: Alexander George, "Case Studies and Theory Development: the Method of Structured, Focused Comparison," in Paul Lauren, ed., *Diplomacy: New Approaches in History, Theory, and Policy* (New York: Free Press, 1979).

component phases to facilitate the subsequent evaluation of how adversaries' possession of WMD precisely affects the process.

With this foundation set, the project team focused on Step 2 – understanding the effects of WMD-armed adversaries on US coercion potential. Concurrently with Step 1, the project team had already sought to deepen its understanding of state motivations for acquiring and using WMD.<sup>4</sup> This analysis included both a theoretical section (laying out political, military, and economic motivations for and uses of WMD) and actual behavior (present and past) based on a review of the security policies, actions, and declarations of proliferants.<sup>5</sup> With these inputs and the coercion dynamic model developed in Step 1, the project team assessed the effects of adversary WMD. Team members did this by evaluating the positive and negative effects of WMD (from the US perspective) on each subcomponent of the coercion dynamic process. This approach allowed the project team to identify the particular elements of the process most affected by WMD and subsequently the overall severity for diminishing US coercion potential. The project team vetted this analysis by interviewing a number of international security and regional experts including scholars from the Massachusetts Institute of Technology (MIT), Harvard University, Stanford University, the Council on Foreign Relations, and the Brookings Institution (see the bibliography for a list of the individuals interviewed).

Having identified how adversary WMD possession diminishes US coercion potential, the project team moved to Step 3 – exploring ways to restore US prospects. Beginning with an evaluation of the merits of competing response strategies, the project

---

<sup>4</sup> Some of the tasks for these steps overlapped in actual execution of the project to conform to the initial statement of work and achieve economy of effort.

<sup>5</sup> As a part of this analysis, the study team evaluated the differences between nuclear weapons, biological weapons (BW), and chemical weapons (CW).

team assessed alternative declaratory policy and force structure changes that would reduce US vulnerabilities and increase the perceived costs to the adversary of revisionist behavior. The interviews mentioned in the preceding paragraph also served to inform judgments in this phase of the study. In addition to military-based actions, the project team also examined the potential of regional cooperative measures to reduce the WMD challenge and underlying tensions that threaten US national interests. This research involved reviewing past regional cooperative efforts both in the areas of concern (i.e., the Middle East, the Persian Gulf, South Asia, and East Asia) as well as other areas with significant regional cooperative activity (e.g., South America and Africa). It focused on identifying the conditions that facilitate stabilizing agreements and assessing the likelihood of these conditions arising in the regions of concern.

Finally, team members synthesized its findings from the individual tasks into a final report that evaluates the scope and magnitude of the challenge and recommends a course of action to address it.

## **THE CHALLENGE**

Although WMD (especially nuclear weapons) have always had appeal as strategic weapons, force multipliers, and political symbols, their attractiveness for potential adversaries of the United States has expanded significantly since 1990. There are several reasons for this change. First, the collapse of the Soviet Union and Russia's subsequent retrenchment from an activist foreign policy has left the US as the only superpower. Second, the United States military has demonstrated enormous conventional capability in

the Persian Gulf War and subsequent conflicts such as the 1999 Kosovo air campaign.<sup>6</sup> The real and perceived growing conventional imbalance has fostered a fear in adversaries that the US military can inflict serious damage without having to risk significant casualties. Finally, the combination of these first two points has forced would-be adversaries to regard US credibility to carry out coercive threats as high even when the adversary clearly has greater interests at stake.

At the same time, the end of the Cold War has created some uncertainty about where US interests lie and how significant they remain. This uncertainty increases the sense of adversaries that they may be able to offset the threat of US intervention by raising the potential costs, and thus the risks, to an unacceptable level. WMD offer a potential means of imposing such costs and risks on the United States.

Beyond concern about US pressure, foreign leaders have found a range of military, political, and economic motivations to pursue WMD.<sup>7</sup> These weapons allow a state to supplement its own conventional military capability as well as compete with rivals possessing or pursuing WMD.<sup>8</sup> WMD also potentially heighten a state's regional status, enhance its global prestige, and gain independence from WMD-armed allies.<sup>9</sup> Moreover, WMD acquisition may aid leaders' efforts to redress their sagging popularity and assuage pro-WMD interest groups.<sup>10</sup> Although not a primary motivation for

---

<sup>6</sup> In this paper, the terms conventional military and non-WMD forces are used synonymously.

<sup>7</sup> If leaders' perception of the world changed fundamentally, an even greater desire for WMD could emerge. In particular, any of three potential developments could produce a paradigm shift with regard to the attractiveness of WMD: (1) a significant combat use of WMD, especially if it abetted the user accomplishing its goals, (2) a significant breakdown of nonproliferation norms, or (3) a significant change in the degree of technical difficulty to obtain WMD.

<sup>8</sup> For example, Pakistan's motivations for acquiring nuclear weapons stem in part from a perceived need to redress a conventional imbalance *vis-à-vis* India.

<sup>9</sup> This factor was a key motivation for China's desire to attain nuclear weapons in the face of growing political discord with the Soviet Union in the late 1950s.

<sup>10</sup> The Indian political leadership under Indira Gandhi in the late 1960's and early 1970's was propelled towards nuclear testing partly from pressure by the Indian scientific and technical community.



acquisition, WMD also have potential economic benefits as a source of export revenue (e.g., North Korea).

The particular constellation of motivations for seeking WMD varies from country to country, but in some cases (such as Iran, Iraq, India, Pakistan, and North Korea) the appeal has proven strong enough to overcome disincentives for proliferation.<sup>11</sup> The actual uses of WMD vary, states that use these weapons for largely non-military objectives are less likely to harness their military potential by vigorous training, developing doctrine, and obtaining and sustaining critical associated capabilities. While recognizing the many potential uses of WMD, the remainder of this report focuses on the strategic effects of these weapons on US coercion potential.

It is necessary to discuss briefly the different types of WMD: nuclear, biological, and chemical.<sup>12</sup> Each type entails somewhat different characteristics. The project team considered the differences in terms of affordability, technological feasibility, treaty prohibition, destructive power, combat utility, reputation, and strategic effectiveness. Clearly, nuclear weapons carry enormous political and strategic utility, which outweighs the political, economic, and technical costs of these weapons for some proliferant states. Although decisionmakers seem to regard biological weapons as having somewhat lesser political cachet, they are more feasible to obtain than nuclear weapons and can be used to considerable strategic effect. Chemical weapons have even less cachet than biological

---

<sup>11</sup> Strong disincentives also exist for WMD proliferation including (1) military reasons--a secure alliance with a WMD power, the risk of becoming a WMD target, the potential to trigger a rival with latent capacity to intensify WMD efforts, and the risk of counter-proliferation strikes; (2) international politics reasons--sacrifice a peaceful reputation, undermine international legal commitments, and erode regional and global arms control efforts; (3) domestic politics reasons--opposition from the public and key interest groups; and (4) economic reasons--high development and sustainment costs, technical shortcomings, and vulnerability to economic sanctions.

<sup>12</sup> The paper excludes other weapons that sometimes are treated as WMD, including radiological and large-scale high explosives to concentrate on the core WMD types.

weapons, but in large quantities they can still have significant battlefield utility.<sup>13</sup> In assessing which type of capability to pursue, states will generally mirror-image local rivals, unless overwhelmingly constrained by resources or technical limitations. When confronting WMD-armed adversaries, the US is most likely to face one of four arsenal types: nuclear only, chemical only, biological and chemical, or nuclear, biological, and chemical. When appropriate, this paper denotes a particular type of weapon, but in general the term WMD is used to cover all three major unconventional weapons, each of which complicates US coercive potential.

## THE COERCION DYNAMIC

This study broadly defines coercion as the threat of force or limited use of such force in pursuit of national security objectives. Thus, coercion includes both compellence (attempts to get other states to take actions desired by the asserting state) and deterrence (attempts to get other states to refrain from taking action opposed by the asserting state). Analyses of coercion often tend to focus exclusively on compellence or deterrence, particularly the latter. Yet, the basic processes at work in both of these are similar, and a common analysis facilitates comparison of how WMD affects achieving each of these objectives.<sup>14</sup> The study further differentiates between levels of deterrence and compellence: general (non-crisis) deterrence, immediate (crisis) deterrence, intra-war

---

<sup>13</sup> Chemical weapons are the only WMD that have been used on the battlefield in the latter part of the 20<sup>th</sup> century. States that have utilized CW include Egypt in the Yemeni Civil War (1963-1967); both Iraq and Iran in the Iran-Iraq War (reports of Iraqi use beginning in 1983, Iran in 1986-87); and Libya against Chad in 1987.

<sup>14</sup> *Ceteris paribus*, compellence is harder to achieve than deterrence since it requires the target state to take action when capitulating and thus appear weak, unlike deterrence in which the target state can simply hold firm and declare it had no intention to act.

deterrence, immediate (crisis) compellence, and intra-war compellence.<sup>15</sup> Ultimately, compellence and deterrence are dimensions of the more basic question of how the US can influence adversaries through threats or limited uses of force.

Understanding the dynamics of coercion requires a systematic consideration of its phases and components. Most assessments tend to provide either some deductively-derived theoretical propositions or inductively-derived historical observations. Often analysts stress that successful coercion, or at least deterrence, is a product of three main components – capability, credibility, and communication.<sup>16</sup> Although such statements are not inaccurate, a more detailed conceptualization of the coercion dynamic needs to be undertaken to understand the process. Three discrete phases must be highlighted in order to capture the distinction between the asserting state's generation of a threat and the target state's interpretation of that threat. Figure 1 lays out the phases of X's attempt to coerce Y.<sup>17</sup>

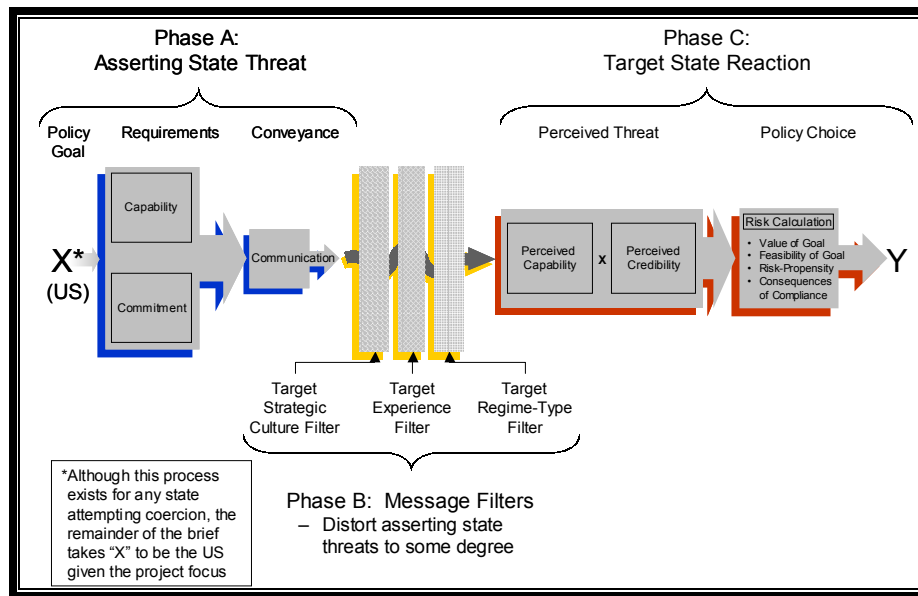
---

<sup>15</sup> These categories build on Patrick Morgan's typology of deterrence. See: Patrick M. Morgan, *Deterrence: A Conceptual Analysis*, (Beverly Hills, CA: Sage Press, 1977).

<sup>16</sup> See: Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966); Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989). Patrick M. Morgan, *Deterrence: A Conceptual Analysis*, (Beverly Hills, CA: Sage Press, 1977). Keith Payne, *Deterrence in the Second Nuclear Age*, (Lexington: University Press of Kentucky, 1996).

<sup>17</sup> The same dynamic process of X-Y interaction also captures attempted *assurance* of an ally. Instead of conveying a threat, the asserting state seeks to convey persuasively its reliability as a protector. In many coercive situations, the US is simultaneously attempting to assure one or more allies of its reliability as a protector and gain their cooperation while pressuring an adversary.

Figure 1: The Coercion Dynamic



### *Phase A: Asserting State Threat*

The asserting state must determine its goal and generate a threat aimed at achieving it. The asserting state, in this study the United States, has an important national security goal that decisionmakers have determined can best be obtained by coercion. A potentially effective threat requires two distinct elements: military capability and political commitment. An effective capability consists of sufficient and available military forces able to inflict such high costs on the adversary (either through denial of objectives or infliction of punishment) that the adversary questions the desirability of pursuing its own objectives. Among the key components of capability are offensive strike forces, active and passive defenses, power projection assets, and access to the region in the form of sea points of debarkation (SPOD), air points of debarkation (APOD), forward bases,

and prepositioned equipment.<sup>18</sup> The need for access declines as power projection assets and stand-off weaponry increase in quantity and quality.

Capability is necessary, but not sufficient for an effective coercive threat since the asserting state must also be willing to commit that capability until the adversary concedes. US commitment is extremely context-dependent. Most importantly, US officials consider the level or value of interests at stake and the perceived risk of casualties. In addition, they assess the degree of domestic consensus for intervention as well as regional and international support for the policy. Policymakers also weigh the extent of competing national security priorities and the success of similar efforts in the past.

The asserting state's capability and commitment must then be transmitted to the target state. Conveyance of the threat can occur through public statements, direct diplomatic exchanges, third-party intermediaries, and military actions. Military actions include force deployments, heightened alert levels, joint exercises with regional allies, and the completion of defense agreements with regional allies. For the United States, the clarity and effectiveness of threat conveyance suffers if the nation does not appear united behind the President. Contributing factors to such confusion include public disclosure of a division of opinion within the Executive Branch of the US government, publicly uttered dissenting opinions by other elites (e.g., Members of Congress, former policymakers, media commentators), and polls revealing significant public opposition to the policy.<sup>19</sup>

---

<sup>18</sup> The US possesses an array of systems such as strategic bombers, surface naval vessels and submarines armed with cruise missiles, and aircraft carriers capable of striking the enemy without access to regional bases.

<sup>19</sup> A clear example of public US division undermining US threat communication occurred in the Vietnam War, especially after the 1968 Tet Offensive. The North Vietnamese leadership was willing to continue the war in the face of overwhelming US conventional superiority in part because it perceived that US public and elite discord would ultimately bring about American withdrawal and defeat. See: George C. Herring,

*Phase B: Message Filters*

Even if the asserting state demonstrates its capability and commitment, the message may be distorted by the particular characteristics of the target state and the context in which the coercion attempt occurs. This potential distortion can be understood as a series of filters that influence the target state's perceptions of the asserting state's capability and commitment. Dividing this filtering process into three distinct components – target strategic culture, target experience, and target regime type – facilitates understanding how specific attributes of the target state affect their worldview and interpretation of threats. These filters are not easily altered by the asserting state during an ongoing coercion attempt, but interaction may reshape them to some extent over time.<sup>20</sup>

Most states possess long-standing strategic cultures that influence how leaders interpret external events, assess strategic situations, and identify appropriate security policies.<sup>21</sup> Differences in strategic cultures between the US and the target state may cause or contribute to this distortion facilitating the latter's misperceptions and badly

---

*LBJ and Vietnam: A Different Kind of War*, (Austin, TX: University of Texas Press, 1994) and Robert D. Schulzinger, *A Time for War: The United States and Vietnam, 1941-1975*, (New York: Oxford University Press, 1997).

<sup>20</sup> Deterrence theories often include a perception filter between the asserting and target states, but few break this filter down into its component parts so that different influences on perception can be examined more precisely. These filters are similar to Michael Brecher's decisionmaking prisms "through which elite perceptions of the operational environment are filtered." See: Michael Brecher, B. Steinberg, and J. Stein, "A Framework for Research on Foreign Policy Behavior," *Journal of Conflict Resolution*, Vol. 13, No. 1, March 1999, pp. 81-86.

<sup>21</sup> Strategic culture is defined here as the framework representing a state's attitudes, pattern of behavior, and achievements, in which strategic ideas are formulated and security policy is promulgated. See: Alastair Iain Johnston, "Thinking About Strategic Culture," *International Security*, (Vol. 19 Spring 1995). It is influenced by unique geographic, geopolitical, cultural, historical, and economic factors. Similarly, some analysts have ascribed states with strategic personalities that shape their reaction to events or at least put boundaries on the range of policies available to decisionmakers. See: Caroline F. Ziemke, "The National

informed policy choices. Also, contrasting strategic cultures will influence how risky leaders view particular threats or actions in part by reflecting their strategic views and values (e.g., casualty aversion).<sup>22</sup>

Leaders in the target state also have an understanding of history that can either undermine or reinforce their perception of US capability and commitment. Prior interaction directly between the asserting and target states is the most influential history, especially if this experience was military in nature and with the current asserting and target state regimes.<sup>23</sup> Next in importance are the history of broader US involvement in the region and the consequences of that involvement. To a lesser degree, adversary leaders also will be influenced by the precedents set (or lack thereof) from US behavior in similar situations outside of the region.

The combined effects of the adversary's particular political structure, decisionmaking process, and level of domestic support compose the target regime-type filter. These characteristics can affect how leaders receive and evaluate information. First, the structure of the regime itself influences decisionmakers' perceptions. For example, leaders in an established democracy likely possess different "personalities" and perspectives from rulers in authoritarian regimes. Similarly, the nature of decisionmaking process affects leaders. The process can range from an open, diverse system receptive to negative information to a closed, small group of sycophants relaying only positive news to the ruler regardless of the truth. Finally, the degree of domestic

---

Myth and Strategic Personality of Iran: A Counterproliferation Perspective" in Victor A. Utgoff, ed. *The Coming Crisis: Nuclear Proliferation, US Interests, and World Order* (Cambridge, MA: MIT Press, 2000).

<sup>22</sup> For example, China's historic military strategy of "People's War" has created a strategic culture that is more accepting of human casualties for achieving military objectives in war. See: *On Coalition Government*, Vol. 3 of *Selected Works of Mao Tse-Tung* (Beijing: Foreign Language Press, 1967), p. 215.

support for the regime, ranging from considerable to negligible, is significant because vulnerable leaders are likely to process information differently than confident, secure officials.<sup>24</sup>

### *Phase C: Target State Reaction*

After the information has passed through these filters, decisionmakers in the target state will evaluate the threat, conduct an overall risk calculation, and ultimately select a course of action. The perceived threat is a product of the asserting state's perceived capability and perceived credibility of political commitment. Thus, if leaders in the target state perceive the asserting state as possessing high capability but minimal commitment or vice versa, they are likely to view the threat as neither formidable nor highly persuasive.

Combining this perception of the threat with other key considerations, decisionmakers in the target state calculate the relative risk of resisting US preferences. This risk calculation forms the basis for leaders' policy choices.<sup>25</sup> Four key factors influence this risk calculation. First, leaders will assess the feasibility of their goal by weighing their perceptions of the enemy threat against their own probability of successfully achieving the state's goal. Second, policymakers in the target state will consider the value placed on their objective. If strongly committed to this goal, they will be more likely to discount high perceptions of the threat. Third, decisionmakers possess a distinct risk-propensity. By nature, the regime, as a whole or individual leaders, may be

---

<sup>23</sup> For example, US threats to deter Iraq in the summer 1990 suffered in part from Iraqi leaders having received considerable US military and political support during the Iran-Iraq War in the 1980s.



either more or less willing to run risks. Finally, leaders will consider the consequences of compliance. Capitulation to the US could make the regime appear weak (domestically and internationally) and thus it potentially entails great risk.<sup>26</sup> This is especially true when the asserting state is seeking to compel the adversary to stop or reverse an action underway.

## **EFFECT OF ADVERSARY WMD-POSSESSION ON US COERCION**

The study team found that adversary WMD-possession, even in limited quantities, significantly affects the coercion dynamic. This section considers the effects of WMD on each component of the process as well as its cumulative impact. It is important to note that adversary possession of WMD may have both positive and negative consequences for the United States in particular parts of the coercion dynamic. That said; the study team found that adversary WMD-possession has an overall negative effect on the US ability to coerce.

### *Phase A: Asserting State Threat*

Adversary WMD-possession (whether chemical, biological, or nuclear) has a largely deleterious effect on US capability. The US military currently cannot fully counter the threat of WMD except through escalatory threats. Active defenses are currently inadequate, especially against ballistic and cruise missiles.<sup>27</sup> Passive defenses

---

<sup>24</sup> The type of political structure shapes the groups that matter politically and types of individuals that reach power, but whether dependent on a mass public or exclusively elites for support, all regimes can be more or less secure domestically.

<sup>25</sup> See: Bruce Bueno de Mesquita, *The War Trap*. (New Haven: Yale University Press, 1980).

<sup>26</sup> A regime in a less secure domestic position probably will be less willing and able to comply with the asserting state even if its leaders regard the asserting state threat as high.

<sup>27</sup> Against ballistic missiles, the US currently fields only limited, lower-tier theater missile defenses (TMD).

against CW/BW can be somewhat successful, but they entail significant loss of operational effectiveness by forcing troops to wear Military Operational Protective Posture (MOPP) gear.<sup>28</sup> Preemptive strikes with the intention of completely eliminating adversary WMD capability are extremely difficult, although destroying some stockpiles or systems would be valuable if conflict seems imminent. Moreover, US power projection capability would suffer given the vulnerability of APODs, SPODs, prepositioned equipment, and forward bases to WMD attack.<sup>29</sup> Although the US has some long-range strike systems and is not entirely dependent on forward-area access, its current capability to project military power (both air and ground) diminishes significantly without access. Allies could also withhold access if their facilities are overtly threatened, especially if one is attacked before US forces arrive. Adversary WMD-possession does make threats of US nuclear weapons use more credible and promotes the development of missile defenses that may enhance general coercive capabilities.<sup>30</sup>

In contrast to capability, the effect of adversary WMD on US commitment is variable, depending on the dynamics of the specific scenario. On the negative side, adversary WMD creates the potential for heavy casualties thereby discouraging intervention, especially given American leaders' perceptions of a casualty-averse US public.<sup>31</sup> US coercion attempts against an adversary possessing WMD probably will

---

<sup>28</sup> Persistent CW attacks are extremely hard to defend against. Moreover, vaccination against BW is possible only for individual agents creating a major challenge to protect soldiers and citizens from all potential attacks.

<sup>29</sup> See: "Impact of Chemical/Biological Threats on Pre-Positioned Logistics Operations," a study by DFI International for the US Defense Threat Reduction Agency, Advanced Systems and Concepts Office (July 1999), and Greg Weaver and J. David Glaes, *Inviting Disaster: How Weapons of Mass Destruction Undermine U.S. Strategy for Projecting Military Power*, (McLean, VA: AMCODA Press, 1997).

<sup>30</sup> US leaders cannot credibly threaten using nuclear weapons against non-WMD armed actors.

<sup>31</sup> Although the work by Peter Feaver of Duke University and others in the Triangle Institute for Security Studies' Project on "The Gap Between Military and Civilian Society" has shown that the US public is not as casualty averse as commonly believed, US decisionmakers strongly believe in the public's casualty aversion, affecting their policy choices. Also see "Eric V. Larson, *Casualties and Consensus: The*

require a lengthy and costly effort since quick and decisive intimidation is less likely than against a non-WMD state. Thus, in regions where the US level of interest is moderate to low, sufficient US commitment to conduct a serious attempt at coercion will be less likely as the prospect for low-risk or easy victories fades against a WMD-armed adversary.

On the positive side, adversary possession of WMD (especially when the adversary is a revisionist state in a region of concern) can heighten the US level of national interest by demonstrating a clear and significant threat that requires an American response. This heightened level of interest would likely diminish domestic division over intervention and bolster the President's position. US commitment might also be bolstered if regional allies increase cooperation and burden-sharing as a result of feeling more threatened by a WMD-armed adversary.<sup>32</sup> Ultimately, the relative weight of these potentially counteracting pressures (i.e., increased potential for casualties versus potentially increased US level of interest) on US commitment against WMD-armed adversaries will depend on the specific context, especially the extent of the underlying US security interests at risk.

Even when adversary WMD provokes a more united and committed US effort, conveying such commitment is still a significant challenge against a WMD-armed adversary. In particular, the US faces difficulty communicating its position on nuclear retaliation. When facing WMD-armed adversaries, the US has employed a policy of "calculated ambiguity" that intentionally leaves the retaliatory threat of US nuclear

---

*Historical Role of Casualties in Domestic Support for U.S. Military Operations*, Santa Monica, CA, RAND, MR-726-RC, 1996, and James Bruk, "Public Support for Peacekeeping in Lebanon and Somalia: Assessing the Casualties Hypothesis," *Political Science Quarterly*, Vol. 114, No. 1, 1999, pp. 53-78.

weapons unstated but possible. Despite some significant political (both domestic and international) and strategic advantages, this policy depends on uncertainty making misperception and misjudgment more likely, which could be dangerous with an adversary already emboldened by WMD. (The limitations of “calculated ambiguity” and potential for a different approach will be examined later in the paper.) Moreover, adversary WMD-possession, by prompting greater caution and deliberation in force deployments, may weaken the ability of the US to signal physically its coercive threat.<sup>33</sup>

### *Phase B: Message Filters*

The effect of adversary WMD-possession on the message filters is highly context-dependent and varies from region to region and state to state. That said, some observations can be made. In general, the presence of adversary WMD is likely to intensify the US challenge of clearly communicating its coercive threat.

Different strategic cultures mean that WMD will have a varied effect on this filter. On the one hand, in strategic cultures that exhibit tendencies towards hyper vigilance over security including surprise attacks against their adversaries, WMD provide a safeguard against retaliation that probably diminishes the perception of the US threat and the potential risks of bullying or attacking its neighbors. Moreover, in strategic cultures without a coherent theory of deterrence, WMD may be regarded as tactical weapons rather than strategic tools that allow the state to avoid conflict. On the other hand, in states with strategic cultures amenable to minimum or finite deterrence and the *status*

---

<sup>32</sup> Of course, US commitment might suffer if regional allies either try to free-ride, believing that adversary WMD makes US intervention more likely, or actually bandwagon with adversary.

*quo*, even small WMD arsenals, particularly nuclear weapons, can provide a sense of security. Leaders in these states may feel able to concede to the US on specific issues without fear of jeopardizing broad national security objectives.

Adversary WMD-possession affects the experience filter by potentially changing the history and analogies leaders regard as germane to the current context. Some proliferants actually seek WMD in part to make history or experiences of active and successful US involvement irrelevant, especially states in regions with a high level of US military involvement and interest (e.g., the Persian Gulf and East Asia). Overall, decisionmakers in potential adversary states of the US appear to view the predominant lesson of past WMD-possession is that nuclear weapons provide an effective deterrent against the US (e.g., the USSR in the Cold War). Some foreign officials concluded that Iraq's lack of nuclear weapons in the 1991 Persian Gulf War undermined Baghdad's effort to deter US involvement.<sup>34</sup> The lesson learned by foreign officials from Iraq's possession of BW and CW is less clear; either it failed to deter the US completely or it, as "weapons of last resort," helped dissuade the US from advancing on Baghdad and overthrowing the regime. The post-war admission by senior Bush administration policymakers that the US would not have retaliated against Iraqi CW/BW use with US nuclear weapons may temper the influence of this event as a US positive for future

---

<sup>33</sup> For example, the failure to take particular defensive actions such as inoculating troops against certain biological agents or providing them with adequate Military Operational Protective Posture (MOPP) gear could cloud US signals.

<sup>34</sup> See: General K. Sundarji's (former Chief-of-Staff in India) statement: "The Persian Gulf War showed that if you are going to take on the US you had better have a nuclear weapon." (George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation*, (Berkeley, CA: University of California Press, 1999).

crises.<sup>35</sup> In general, adversaries in conflicts with the US will be tempted to search for experiences or interpret analogies to suggest likely US weakness.

Given the significant variation that exists among target regime filters, the study team focused on the attributes most likely to distort US threats when the adversary possesses WMD. In regimes more authoritarian in nature, leaders of institutions with a key stake in WMD programs are likely to be influential decisionmakers in a crisis.<sup>36</sup> They should be expected to downplay the seriousness of the US challenge and overestimate their own systems' capabilities. More broadly, regimes with political systems different from the US probably will expect their possession of WMD actually to divide the US because of the ability to produce casualties, even if such assumptions may be presumptuous. This influence encourages foreign leaders to underestimate US commitment. In particular, regimes with closed, small decisionmaking processes (i.e., the ones the US is most likely to encounter such as Iraq, North Korea) are more likely to rely on conventional wisdom about WMD effects rather than to try and discern a nuanced understanding of US threats.

---

<sup>35</sup> See: George Bush and Brent Scowcroft, *A World Transformed*, p. 463; General H. Norman Schwarzkopf with Peter Petre, *General H. Norman Schwarzkopf: The Autobiography—It Doesn't Take A Hero*, (New York: Bantam Books, 1992), p. 313; Colin Powell, *My American Journey*, pp. 427 and 486; and James A. Baker, *The Politics of Diplomacy*, p. 359.

<sup>36</sup> For example, in Iran the mullahs and Islamic Revolutionary Guard Corps, both of which are conservative, control Iranian WMD rather than the more liberal President Khatami, legislature, or regular military. In a crisis with the US, these groups would likely be influential in determining Iran's positions and actions.

*Phase C: Target State Reaction*

Overall, therefore, adversary WMD-possession exacerbates the US challenge of generating a strong threat perception.<sup>37</sup> Leaders in the target state, appreciating the US limited military ability to counter WMD, will generally regard American threats of intervention as less plausible. This perspective likely will remain as long as US defenses remain limited and intervention entails risking significant American casualties. Beyond the specific effects of adversary WMD possession, it magnifies distortions caused by the message filters. These distortions encourage decisionmakers in the target state to regard US threats as less credible even if actual commitment is high. In particular, the difficulty in credibly threatening US nuclear retaliation for any WMD use hurts overall perceptions of US commitment.

When considering whether to comply with or defy US demands, WMD-armed adversaries will combine reduced perceptions of the US threat with an overall risk calculation of whether resisting US coercion is more feasible and worthwhile. Although WMD-possession does not affect the value a regime places on its own goals, appreciation of increased compliance costs and increased goal feasibility can encourage its leaders to be more defiant. The expense of acquiring WMD and the prestige and popularity attached to these weapons mean that subsequent capitulation to the US could be interpreted as an even greater sign of regime weakness than if WMD were not present in their arsenals. The possession of WMD also boosts adversary confidence in achieving its goals, making defiance of the US appear less risky. Alternatively, in some cases (as

---

<sup>37</sup> If, however, leaders in the target state believe the US would actually use nuclear weapons in retaliation for WMD use, including BW or CW attacks, then adversary perception of US threats would actually escalate. Establishing such a view, however, will be difficult especially in the minds of foreign leaders desiring to reach the opposite conclusion.

noted above, strategic culture will influence which cases), the adversary regime may regard its WMD as “weapons of last resort” and protection against US efforts to affect regime change. In such a circumstance, leaders in the target state could comply with the US on lesser issues without excessive fear of setting a US dominance precedent that could ultimately threaten regime survival.

### *Summary of WMD Effects*

Adversaries possessing even small WMD arsenals complicate and ultimately diminish US coercive capacity by undermining Washington’s ability to convey a capable and credible threat. Both American and foreign leaders recognize that WMD represent the most effective means of generating a significant number of US and allied casualties in a conflict. Until this military reality changes, adversaries will value WMD highly and be less compliant to US coercion attempts. In addition, the effects of WMD on the adversary’s perceptions of US commitment are clearly negative for Washington. Regardless of the WMD effect on the actual level of US commitment, adversary leaders will probably believe that American sensitivity to casualties will undermine US commitment. Adversary leaders are also likely to regard American willingness to carry out implicit or vague threats of nuclear retaliation for WMD use as uncertain at best or incredible at worst.

This negative evaluation should be viewed in context of the general type of coercion (compellence and deterrence). The effect of adversary WMD is likely to be much more pronounced for US cases of compellence than deterrence.<sup>38</sup> US leverage to

---

<sup>38</sup> Studying successful deterrence has long been recognized as a research problem since rarely does the evidence exist of the deterrent threat clearly dissuading an aggressive actor. Thus most observations are



compel an adversary declines based on the latter's sense of reduced vulnerability, especially from the lessened effect of its conventional inferiority. In contrast, US efforts to deter should not suffer as much since most potential adversaries seem to appreciate that WMD use in support of revisionist goals would hold less military utility, would produce more international outrage, and would make *post hoc* US retaliation far more likely.

The distinction between compellence and deterrence highlights the importance of US vigilance and swift reaction to emerging challenges by revisionist states with WMD. Thereby it can seek to deter rather than compel. A lapse of vigilance increases the risk of an adversary "*fait accompli*" strategy in which it uses conventional forces to seize desired territory and then threatens WMD use as a deterrent against attempts at expulsion. Such a ploy would place the US in the undesirable position of having to attempt compellence despite in essence being the *status quo* party.

## ENHANCING US COERCION POTENTIAL

In response to adversary WMD-possession, the US can enhance its own coercion potential most effectively by deterring opponents from threatening or using WMD. Removing an adversary's WMD from consideration reduces the confrontation to a conventional stand-off, which both parties would generally presume to favor the US.<sup>39</sup>

---

either cases of deterrence failure or compellence. Regardless of political science arguments over the feasibility of assessing deterrent success, it is clearly easier to achieve deterrence than compellence.

<sup>39</sup> Although few doubt US conventional superiority against practically any other single adversary in the world (even for the next ten to twenty years), there have been questions raised about US conventional superiority against an adversary if the US is already involved in a Major Theater War (MTW) elsewhere (for example, comments by Thomas J. Christensen, Associate Professor, Political Science Department, Massachusetts Institute of Technology, Cambridge, MA, Interview by DFI, October 25, 2000). Thus, if the US attempts to coerce an adversary while engaged in another MTW, it may be far less persuasive.

Thus, the perceived relative costs to the US would become favorable. Moreover, since the behavior and statements of foreign leaders indicate that they regard WMD as the key asymmetric option for denying the US its coercion objectives,<sup>40</sup> successfully undermining the value of WMD after years of investing considerable political and financial capital probably would be disheartening to adversary states. Such a situation would not necessarily mean the US obtains its goal since relative interests play a critical role as well, but the ability to intervene and run substantially lower costs greatly enhances the US prospects.

### *Strategic Approaches*

The growing WMD challenge in the 1990s has prompted calls for a multitude of weapons systems, but without considering system viability within a strategic framework, evaluating their contribution to the overall coercion potential is not possible. Given the effect of an adversary's WMD on its perception of US capability and credibility, deterrence of WMD requires a US strategy able to convey persuasively to the adversary the low probability of successfully challenging the United States. Such a strategic approach has to entail both a declaratory policy to shape adversary expectations of US reaction to WMD-use and a corresponding force structure that offsets and minimizes vulnerabilities to WMD.

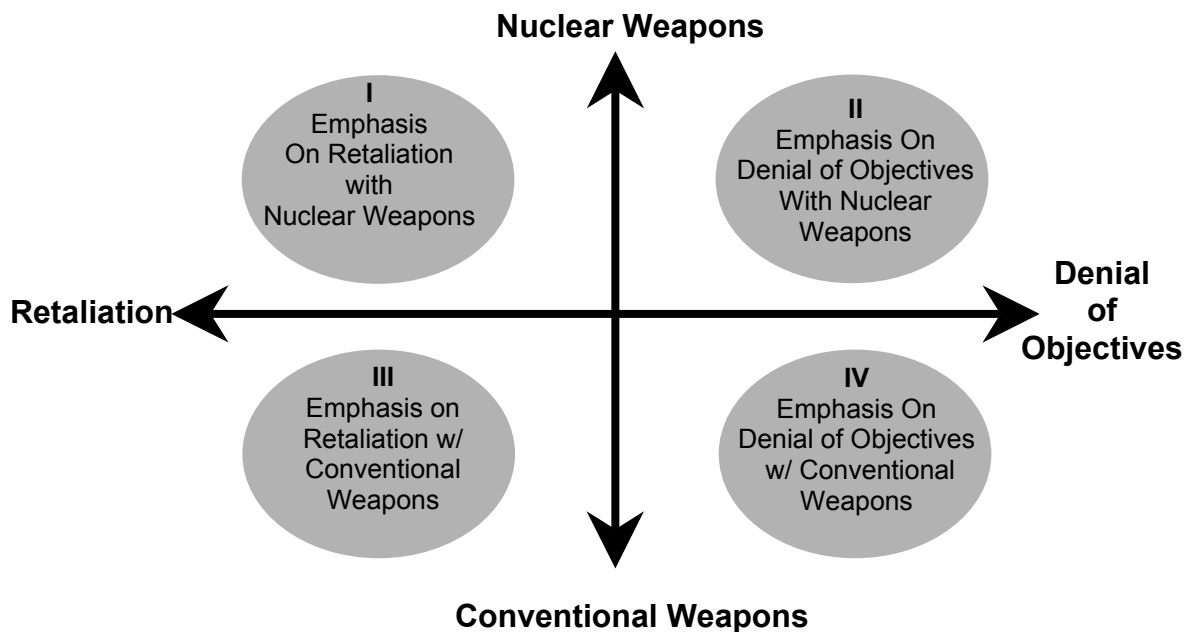
---

Examining this assumption of US conventional superiority in the coercion dynamic is beyond the scope of this project.

<sup>40</sup> For example, North Korea has prepared for CW to be a critical counter to US military capabilities, especially by attacking ports and airfields to deny US reinforcements access. See: Joseph S. Bermudez, Jr., "The Democratic People's Republic of Korea and Unconventional Weapons," in Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers will use Nuclear, Biological, and Chemical Weapons*, (Ithaca, NY: Cornell University Press, 2000), p. 194.

Strategic approaches for dealing with WMD generally fall along two axes of response: *means* – conventional versus nuclear means and *ends* – denial of enemy objective versus retaliatory punishment. As a result, four basic approaches can be identified. These types are laid out as quadrants in Figure 2.

**Figure 2: Strategic Options**



These archetypes illustrate the range of different choices available to US policymakers, but mixed approaches combining elements along either of the two axes are also options. That is, most recommended policies fall into one of these four quadrants, although few are pure examples.<sup>41</sup> The study team employs these broad, distinct approaches as a heuristic device to facilitate assessing the relative costs and benefits of particular strategies.

<sup>41</sup> Interviews with international security and regional experts contributed to the development of this conceptualization. See bibliography for list of interviewees.

Each strategic approach proposes a particular set of objectives, declaratory policy, and force structure to counter adversary WMD. A Nuclear Retaliation (I) approach would seek to deter adversary WMD by explicitly threatening retaliatory punishment with nuclear weapons. This approach is analogous to the way in which the US deterred the USSR, most notably during the early stages of the Cold War. Given that the US nuclear arsenal vastly outnumbers any current regional WMD force, the capability to carry out such an attack exists today. In the longer run, however, the US will need to maintain its nuclear force to ensure flexibility of delivery systems, including dual-capable aircraft, as well as potency of warheads to keep this strategy viable.

A Nuclear Denial of Objectives (II) approach would seek to deter WMD-use by threatening to prevent an adversary from accomplishing its objectives through the use of US military forces including nuclear weapons. In other words, if the adversary regards itself as unlikely to achieve its desired goals, it probably will not try. At its core, this strategy suggests that nuclear weapons might be more effective for convincing the adversary that its key assets are vulnerable than relying on conventional weapons. For example, the US military could more convincingly threaten hard and deeply buried targets (e.g., bunkers) or widely dispersed targets (e.g., mobile missiles). This approach recommends a wider variety of US nuclear weapons than in the Nuclear Retaliation approach. Although existing nuclear platforms could provide much of this capability sub-optimally, proponents of this approach suggest procurement of lower-yield or so-called “mini-nukes”.<sup>42</sup> Such weapons precisely delivered could be more “usable” than current, higher-yield nuclear weapons, since they would limit fallout and civilian

---

<sup>42</sup> See: Stephen Younger, “Nuclear Weapons in the 21<sup>st</sup> Century,” (Los Alamos, NM: Los Alamos Laboratory, July 21, 2000).

casualties. In addition, this strategy would be enhanced by improved command-control-communications-computers-intelligence (C<sup>4</sup>I) capabilities to reduce collateral damage and improve the probability of successful strikes. Given this approach attempts to coerce by threats of denial rather than punishment, effective defensive capabilities (especially theater missile defense (TMD)) to protect against WMD attack would be crucial for dissuading the adversary from the belief that it could still inflict sufficient casualties to deter the United States.<sup>43</sup>

By contrast, a Conventional Retaliation (III) approach would expressly threaten the survival of a WMD adversary's regime through the use of exclusively conventional forces. Although similar to the strategy of Nuclear Retaliation, it involves specifically targeting the regime itself (i.e., core assets such as leadership and government institutions, military and intelligence headquarters, elite forces, etc.) while avoiding the negative costs and questionable credibility associated with a reliance on nuclear weapons. The continued evolution of precision-guided munitions (PGM) technology has created the potential for such an approach, whose advocates regard it as capable of threatening regime survival.<sup>44</sup> They also note that US PGM strikes in the Persian Gulf and the Balkans since 1990 have demonstrated this capability sufficiently to alarm would-be adversaries.

That said, all analysts agree that continued improvement of PGMs as well as delivery vehicles and intelligence, surveillance, reconnaissance (ISR) would greatly bolster capability. Moreover, the US must increase stockpiles of its most capable PGMs

---

<sup>43</sup> Furthermore, by 2010-2020, real intercontinental ballistic missile (ICBM) threats to the continental United States (possibly from Iran, Iraq, and North Korea) could require a national missile defense (NMD) deployment.

<sup>44</sup> This point was made by several of the aforementioned experts interviewed during the course of the study.

(such as the Joint Stand Off Weapon [J-SOW] and long-range Land Attack Cruise Missile [LACM]).<sup>45</sup> Finally, the higher quality and quantity of PGMs that can be delivered from stand-off platforms, the more persuasive this approach is likely to be since it reduces dependence on regional access and lowers the risk to US forces.<sup>46</sup> Alternatively, possession of effective missile defenses can offset concern about casualties and permit access.

Finally, a Conventional Denial of Objectives (IV) approach attempts deterrence by threatening to prevent an adversary from accomplishing its objectives through reliance on only US conventional forces. The coercive effectiveness as a deterrent depends on the adversary perceiving that the US could be militarily successful without suffering significant casualties.<sup>47</sup> Potential adversaries, however, have pursued WMD specifically to offset US conventional superiority by attaining the means to inflict higher costs on US forces. Thus, this strategy requires significant improvements in capabilities to be effective, most notably in the areas of active and passive defenses. Also, quantitative limits on US forces mean that if already significantly engaged elsewhere, the US might

---

<sup>45</sup> News reports of precision guided munitions (PGM) shortages as a result of a significant usage, such as happened during the 1999 Kosovo air campaign, can undermine the potential of this strategy to achieve deterrence simultaneously in the rest of the world.

<sup>46</sup> It should be noted that, except for the Nuclear Retaliation strategy, the strategic approaches assume a degree of overseas access/basing in the region of concern. Such access is already somewhat limited. This issue becomes even more significant when the adversary has WMD and could pose significant problems for the US to respond swiftly and persuasively to a threat. WMD states, appreciating how favorable access facilitated US operations in the Persian Gulf War, have channeled their resources and WMD efforts into widely available and increasingly affordable capabilities that allow them to deny US forces rapid access to the theater and sanctuary once in theater. WMD states could also coerce neighbors into denying US and allied forces access to their territory (including surrounding waters and airspace) with the threat of WMD attack. Potential WMD targets include aerial ports of debarkation (APODs), seaports of debarkations (SPODs), massed ground forces, ground force bases and assembly areas, rear-area supply facilities, and main operating bases for theater-based aircraft. Concern about such access constraints has particular force structure implications. See: Greg Weaver and J. David Glaes, *Inviting Disaster: How Weapons of Mass Destruction Undermine U.S. Strategy for Projecting Military Power*, (McLean, VA: AMCODA Press, 1997).

<sup>47</sup> For example see: Benjamin S. Lambeth, *The Transformation of American Air Power*, (Ithaca, NY: Cornell University Press, 2000).

lack sufficient potential capability to deter adversary aggression. Despite its difficulties, advocates of this approach argue that the other three alternatives are false panaceas that distract US leaders from the hard task of bolstering conventional warfighting capability.

### *Strategic Approaches and WMD Challenges*

There is no theoretical basis to consider any one of these four approaches as superior to the others. Each has definite pros and cons, therefore the project team evaluated the potential courses of action against the critical challenges of WMD proliferation faced by the United States. That is, how do these approaches address the difficulty of the US transmitting its threat, shaping adversary perceptions of US capability and credibility, and ultimately, influencing the adversary's own risk calculation? Considering the effects on these key components is particularly useful for identifying the strengths and weaknesses of each approach and developing a superior mixed strategy. Ultimately, these strategies can increase US coercion potential if they shift an adversary's perception of relative costs sufficiently, either through reducing US intervention costs or increasing the adversary's costs as the retaliatory strategies do. They can also work by decreasing an adversary's sense of its probability of success as the denial of objective strategies do. Any of these effects (individually or combined) would make an adversary less likely to risk resisting US preferences.

### *Communication*

Unlike the current policy of "calculated ambiguity," each of these strategic approaches offers an explicit response to adversary WMD use. It is uncertain, however,

whether adopting an explicit policy of nuclear response for WMD-use would generate the desired caution in the adversary given the probable controversy that such nuclear pledges would produce both domestically and internationally. This kind of widespread controversy would result in mixed messages at best and a sense of confusion or fear on the part of the US at worst. Thus, both the Nuclear Retaliation strategy and the Nuclear Denial strategy could actually undermine clear communication of the threat.

By contrast, conventional strategies can be transmitted with greater clarity since in part there would likely be broader support for a conventional response to WMD, at least prior to any WMD use.<sup>48</sup> Although the policy of removing regimes that use WMD via Conventional Retaliation could generate some opposition, support is more likely if portrayed as a response to the initial WMD-use that results in significant casualties to the US or its allies. A policy of undertaking a conventional war against an adversary who uses WMD could be well supported domestically and internationally, but only if the capability exists to keep casualties low through defenses. Without such capability this approach will send a weak signal to the adversary.

#### *Adversary Perceptions of US Capabilities*

Given the vast superiority of the US military in comparison to any other military force today, adversaries generally perceive significant US capabilities for both denial of objective and retaliation strategies. Some areas of particular importance to each of these counter-WMD strategic approaches, however, may be in question. For example, adversaries would likely have some doubt about the ability of the US to successfully



target and eliminate a regime with conventional munitions, at least until the US demonstrates such a capability.<sup>49</sup> Given the existing state of US active and passive defenses, adversaries probably would view their WMD as capable of inflicting significant casualties if the US tried to use conventional forces to stop it. Therefore, the Conventional Retaliation and Conventional Denial of Objective strategies may have limited influence on the perception of US capabilities by WMD adversaries, at least until convincingly demonstrated.

Conversely, the firepower of nuclear weapons translates into adversary appreciation of its vulnerability. No doubt exists about the ability of the US to wreak devastation with a Nuclear Retaliation strategy given the size and perceived reliability of the US arsenal, but the ability to use nuclear weapons effectively as warfighting tools is unproven, and despite the claimed precision, civilian casualties would almost certainly occur. The low-yield types of nuclear weapons optimal for the Nuclear Denial of Objective approach, to limit such collateral damage, do not currently exist. Still, the lethality of nuclear weapons suggests to adversaries that although it may not be optimal, the US has the capability for this Nuclear Denial of Objective approach. Doubts about the credibility of the US commitment to use nuclear weapons, however, are the primary obstacles to these strategies' effectiveness.

---

<sup>48</sup> After the first WMD attack that produced significant casualties, a general swell of support for nuclear retaliation would probably emerge in the United States. Such *ex post* influences, however, are difficult to harness into effective deterrent threats.

*Adversary Perception of US Credibility*

Adversary uncertainty over the actual willingness of the US to use nuclear weapons (except in very specific contexts) translates into greater credibility for conventional-based strategies, but only if the US has developed effective defensive and strike capabilities. Adversaries are likely to doubt whether the US would use nuclear retaliation against smaller WMD states, especially in response to limited CW/BW uses. Adversaries might expect domestic and international concerns over the probability of causing enormous civilian casualties and the existing “nuclear taboo” to dissuade the US nuclear intervention, especially a Nuclear Retaliation strategy. A Nuclear Denial strategy could limit some of these negative effects in execution, but it is difficult to determine the general effect of nuclear threats on the perceived credibility of the US commitment. The effectiveness of nuclear threats are likely to be contextual with regard to the type and target of the adversary WMD employed as well as the US history in the region of occurrence. Nonetheless, adversary leaders are likely to continue being somewhat skeptical that the US would use nuclear weapons in a regional context, at least until witnessing at least one such instance.

A counter-regime Conventional Retaliation against an adversary who uses WMD will generally be considered credible in terms of US commitment, but its effectiveness as a strategy may be in doubt, as noted above. That is, foreign leaders are likely to believe that the US would implement such a policy, but they may doubt its actual capability to overthrow their regimes. Likewise, a Conventional Denial of Objective response to engage a state that has used WMD will generally appear credible if the US can acquire

---

<sup>49</sup> The Kosovo War demonstrated the growing proficiency of US air attacks, but this airpower did not overthrow the regime during the 1999 conflict.

and demonstrate effective defenses to limit the potential risks (casualties and battle damage) that WMD are intended to create. If such defensive capabilities are questionable, then the adversary is unlikely to find this approach threatening or at least question the willingness of the US to intervene.

### *Adversary Risk Calculation*

Since an adversary's overall risk calculation may ultimately override other individual dimensions of the coercion process, influencing this final factor will be a particular key for US success. At this point it is clear that individual strategies are either better at generating greater perceptions of US capability or credibility of commitment. Nuclear-based strategies can significantly affect risk calculations since they substantially raise the stakes for the adversary. They, however, may be undermined if the credibility problems noted above prompt foreign leaders to doubt the US willingness to implement such threats.

The conventional strategies are credible to adversaries as courses of action the US could implement. Yet, adversaries probably still doubt the capabilities that underpin these strategies. A Conventional Retaliatory strategy would raise the potential costs by threatening regime survival, but its reliance on conventional forces unproven for this mission may generate doubts about the chances for success. Thus, adversary risk calculation probably would increase, but by an unclear amount. The Conventional Denial of Objective approach, with limited current capability in the sense that significant casualties would have to be risked by the US especially ground forces, is unlikely to heighten substantially adversary perception of risk. This strategy does not easily raise the

costs for the adversary nor does it necessarily increase risks beyond those that the WMD state has presumably already accepted.

Thus, none of the four archetypes represent a clearly superior approach. The search to influence adversary risk calculations by devising a strategy of perceivable capability and credibility leads to a focus on the Nuclear Denial and Conventional Retaliatory approaches as the more effective counters to WMD. These approaches, involving newer concepts and capabilities, have been crafted to minimize the relative weaknesses of the alternatives. That is, the Nuclear Retaliation strategy is the least credible in terms of US implementation and the Conventional Denial approach is the most difficult to carry out successfully. The Nuclear Denial of Objective strategy offers a more credible way to threaten atomic weapons than the Nuclear Retaliation approach, but less than the Conventional Retaliation approach. Adversaries, however, likely appreciate the significance for the US to cross the nuclear threshold, making the Nuclear Denial strategy less credible than a Conventional Retaliation approach. Yet, despite a recognition of US willingness to attempt Conventional Retaliation, adversaries would likely possess greater doubts about the capability of this approach than if the US employed nuclear weapons in a Denial of Objective strategy. Discerning a relative advantage between Nuclear Denial of Objective and Conventional Retaliation is not easy and not necessary given that the shortcomings of each individually necessitates synthesizing a mixed strategy that incorporates the strengths of each approach.

Before laying out such a strategy, it is important to keep in mind that the relative prospects of these strategic approaches also varies according to the context of the coercion attempt. In particular, in some contexts establishing credibility of US

commitment is harder, while in others demonstrating capability is more of a challenge. For example, the range of potential coercive objectives (general deterrence, immediate deterrence, intra-war deterrence, immediate compellence, intra-war compellence) reflects different stages of a crisis and correspondingly different levels of US involvement. Efforts at general (pre-crisis) deterrence will be times of questionable US commitment, while at the opposite end of the spectrum in attempting intra-war compellence US credibility will likely have been established and demonstrating capability becomes paramount.

Other contextual factors also influence the potential of the different strategies. The environment varies significantly among the regions of likely US coercion. In areas with significant US interests and a history of military involvement (Russia/Europe, the Persian Gulf, and East Asia), US threat credibility is substantially higher. This type of context facilitates approaches in which US commitment is more difficult to convey, including nuclear-based strategies. In contrast, in other regions such as South Asia and the Middle East, the context undermines establishing credibility of US commitment and makes such approaches less persuasive. Other contextual considerations include the type of state being challenged by the US and the form of its WMD arsenal.

## **REGIONAL COOPERATION**

In addition to sound military strategies, adversary WMD could potentially or partially be addressed by regional cooperative initiatives and diplomacy. The project team explored the potential value of such initiatives, albeit in a limited manner compared to the military responses. This limited investigation in part was the result of the inability

to identify useful regional cooperative approaches to address the areas of greatest WMD proliferation, either in terms of the weapons themselves or the underlying tensions that threaten US interests. Given the high status placed on WMD by the states in question and the relative instability of their regions, it is extremely unlikely that WMD can be eliminated or substantially restricted through regional cooperative measures. This pessimistic view is especially true for structural arms control efforts and nuclear weapons free zone (NWFZ) proposals.<sup>50</sup> One area of some limited success, however, has been the US effort to reverse North Korea's nuclear weapons program through foreign aid and other economic incentives.<sup>51</sup> Although the long-term success of such an approach is uncertain, it provides a potential, non-military alternative for dealing with emerging WMD states, when such states face dire economic circumstances.

The most positive element identified here is the potential for confidence building measures (CBMs) to at least shape the possession and deployment of WMD in a less threatening way. CBMs have been used to some degree in regions such as South Asia and the Middle East to lower security tensions. The US might be able to spearhead CBM initiatives with regard to WMD. US-sponsored CBMs are likely to have the most success in regions in which actors view the US as an outside or impartial force, such as in the Middle East or South Asia, rather than a dominant participant on one side, such as in the Persian Gulf and East Asia. Pursuit of such efforts should be careful not to undermine US deterrent threats that have a far greater role in influencing adversary behavior and maintaining US security interests in the region.

---

<sup>50</sup> Nuclear weapons free zones (NWFZs) exist in five regions: Antarctica, Latin America, the South Pacific, Southeast Asia, and Africa. Proposals for NWFZs in the Middle East, Central Europe, and Northeast Asia have received negligible support by germane parties.

<sup>51</sup> The Agreed Framework was signed between the US and North Korea on October 21, 1994.

## CONCLUSION AND RECOMMENDATIONS

From the preceding section, it is clear that no single strategic approach addresses the diverse array of coercive challenges against WMD adversaries the US is likely to face. A mixed strategy incorporating positive elements of these approaches would produce the best result. This strategy should provide a base approach to facilitate US coercion in general, but be flexible enough to allow tailoring of the US policy to the specific context. The mixed strategy presented in this section argues for a still nuanced, but more explicit declaratory policy as well as emphasis on particular force structures to be able to implement that policy.

### *Declaratory Policy*

Given the critical role of adversary perceptions of the likely US response for effective coercion, the US needs to revamp its declaratory policy. The current policy of "calculated ambiguity", which the US has maintained for a decade, does have significant advantages that account for its durability. Most notably, it allows for a greater threat than would be possible with an explicit articulation of thresholds, especially for nuclear use. This feature forces the adversary to consider significant risks if it uses WMD. The policy also potentially minimizes the damage to US credibility in future deterrence attempts. In other words, a failure to respond to a provocation under this policy would not be as easy to interpret as a general lack of US commitment than if the US failed to carry out an explicitly threatened response. In addition, it minimizes domestic political and intra-alliance controversy over projected US nuclear responses to WMD. Finally, this policy

avoids the negative proliferation effects of legitimizing WMD through explicitly declared nuclear threats.

Despite these advantages, the shortcomings of the “calculated ambiguity” policy are significant and intensifying as the threat from WMD adversaries grows with continuing proliferation.<sup>52</sup> In particular, the policy entails significant risk by relying on uncertainty as the key to its effectiveness. In the face of uncertainty over US reactions, adversaries armed with WMD, as characterized earlier in the paper, are more likely to take risks in challenging the United States than non-WMD states. Moreover, expecting adversaries to adopt a worst-case mindset (so that they will fear US nuclear retaliation) is a questionable assumption for non-Western decisionmakers operating in different strategic cultures and political systems. Many of these adversaries have sought to acquire WMD despite (or because of) this existing policy of “calculated ambiguity” so they do not seem particularly likely to be deterred by it. It is also problematic that the existing policy focuses on the means of response – whether or not the US will use nuclear weapons. Uncertainty on this issue will always exist regardless of the declaratory policy, but the US needs, if possible, to shift the focus away from the question of nuclear response to the broader issues of intervention and objectives. Finally, the current policy with its emphasis on ambiguity has actually limited the US government’s planning and preparation for actually responding to adversary WMD use.

A more explicit, but still nuanced declaratory policy, focusing on the potential results (ends) of adversary WMD use as well as the means of attack would be more

---

<sup>52</sup> For a review of these arguments see: Stephen I. Schwartz, “Miscalculated Ambiguity: US Policy on the Use and Threat of Use of Nuclear Weapons,” in *Disarmament Diplomacy*, (February 1998) and David C. Gompert, “Rethinking the Role Of Nuclear Weapons,” in *National Defense University Strategic Forum*, (no. 141, May 1998).



effective. In particular, such a policy, which the project team labels “escalated response,” would consider:

- (1) The type of WMD used (nuclear, biological, chemical, or some combination).
- (2) The target attacked (civilian or military; urban or rural; US homeland or abroad; allied or neutral party).
- (3) The overall effects of an attack (casualties, structural damage, strategic advantage, etc.).

These three factors are, to some extent, cumulative in nature and can be used to set rough thresholds for response. Certain types of WMD attack (essentially nuclear) may be considered significant regardless of their target or ultimate effects. Likewise, certain targets (like the US homeland regardless of casualty levels or substantial casualties against allied populations or US forces) may be considered significant regardless of WMD-type.

By identifying these three factors as key considerations in determining the significance of the adversary attack, the US can craft a more specific and explicit response policy. This policy would more directly shape adversary perceptions and increase the likelihood of deterring the threat or use of WMD without tying the US to an automatic response based on more simplistic criteria. Consequently, the study team recommends such a policy of "escalated response" in which the US would inflict disproportionately high costs in retaliation for WMD use, but not threaten a massive retaliatory blow that would lack credibility. This policy would consist of three explicit positions laid out in Figure 3.

**Figure 3: “Escalated Response” – The Reaction**

- **Action:** A Significant WMD use or Multiple Uses of WMD
  - Especially against the US homeland, US troops, or allied civilians
- **Reaction:** US would seek to overthrow the regime militarily
  - Targeting would focus on regime core assets such as leadership/government institutions, military and intelligence HQs, elite forces, etc.
- 
- **Action:** A Moderate WMD use
  - Such as modest casualties inflicted on US troops abroad or an overseas installation
- **Reaction:** US would seek to eliminate adversary WMD capabilities and other key military assets
  - Targeting would include WMD basing and production facilities, delivery systems, conventional forces, command and control, and other significant installations or infrastructure
- 
- **Action:** Other WMD use (e.g., India-Pakistan War)
  - An attack on a state that is not a US ally and in an area without significant US national interests.
- **Reaction:** US would pursue a multilateral response to address its concern with WMD use, but not pursue independent military action

US responses to significant or moderate uses of WMD would be carried out with either conventional or nuclear weapons or both depending on the operational requirements. The US, however, should avoid placing emphasis on the specific means of its response given the potential for adversaries to determine that non-credible nuclear threats permits them freedom of action. In particular, this “Escalated Response” policy attempts to dissuade adversaries from believing they can employ BW or CW without fear of nuclear retaliation.

Although maintaining the nuclear threat is necessary given the existing limitations in capability (real and perceived) of purely conventional-based coercion strategies, nuclear weapon threats and actual uses of atomic devices should be avoided if at all possible. Repeated nuclear-based threats serve to demonstrate the value of WMD encouraging further proliferation. The actual use of a nuclear weapon by the US, even if a mini-nuke, would even more dramatically increase the draw of WMD for adversaries and other states. Moreover, international pressure would reach such a level after the first US nuclear use that American decisionmakers would likely choose not to conduct further nuclear strikes. Ultimately, crossing the nuclear threshold places the US in a less stable and predictable world.

The third plank might not be made explicit, but it is included as a possibility to lower public expectations in such circumstances. Most notably, it attempts to isolate the South Asia region so that WMD use by India and Pakistan and the likely restrained US response would not set a dangerous perceived precedent. The US should work to indicate that a limited response in South Asia would derive from a lack of American interest and historical involvement in the region rather than as a sign to other would-be WMD aggressors that US threats are not credible. Proponents of “calculated ambiguity” might assert that such explicitness risks undermining US credibility if the United States fails to follow through with its threats. Yet, a failure of the US to respond strongly after WMD-use against itself or allies, regardless of the prior declaratory policy, would severely damage US credibility.

### *Force Structure Requirements*

For this strategy and the associated declaratory policy to be more persuasive, the US military needs to place a priority on some important capability improvements. These changes in force structure would enhance adversary perceptions of the US threat by shifting the relative costs in favor of the United States. Given the likelihood of continued current resource levels, this discussion focuses on three critical areas: active theater defenses, offensive strike systems, and nuclear forces.

First and foremost, the US needs effective, active theater defenses. The US military has an aggressive TMD effort underway that, if even partially successful, would greatly reduce US vulnerability to casualties in the field.<sup>53</sup> Also, such defenses will be critical for maintaining access and basing agreements with regional allies. Progress in establishing a layered TMD, however, will only increase the importance of a complementary cruise missile defense, since cruise missiles will be a natural countermeasure for adversaries respectful of US ballistic missile defenses. The other elements of defense, both national missile defense (NMD) and passive defenses, especially against BW attacks, are important and should receive funding, but progress in active theater defenses would go the farthest to countering adversary WMD possession in the near term.

Also, improved offensive strike capabilities would further drive home to adversaries their vulnerability and the relative costs of resisting the United States. Despite significant progress in this area over the past decade, enhancements in the identification and targeting of key adversary assets (such as mobile missiles and deep

---

<sup>53</sup> The Army (Theater High Altitude Air Defense (THAAD), PAC-3, Medium Extended Air Defense System (MEADS)), Navy (Navy theater-wide, area-wide defense) and Air Force (Airborne Laser) are all developing theater defenses that should be gradually introduced into the force structure over the next five to fifteen years.

bunker targets) would help in conveying clear and persuasive threats to the adversary. Until the US demonstrates the ability to meet the challenge raised by Iraqi mobile SCUD launchers during the Persian Gulf War, American leverage against the target state will suffer.

Finally, given the important role of nuclear weapons for coercive potential, the US must ensure that a flexible nuclear force exists able to meet an array of challenges. As the large residual Cold War force continues to shrink, US officials need to be cautious not to sacrifice flexibility in terms of warheads and delivery vehicles merely for the sake of economy and short-term expediency. In particular, nuclear-capable aircraft (both strategic bombers, which have less relative value against Russia than the other legs of the triad, and dual-capable fighter-bombers) provide a useful resource against states with small or nascent WMD arsenals. Although new, low-yield nuclear weapons could have some value in regional contexts, manufacturing new nuclear weapons represents a costly (fiscally and politically) luxury that is probably not necessary to threaten credible US nuclear use. That is, adversaries are not likely to find such weapons significantly more disconcerting than existing nuclear weapons simply because US officials may regard them as more “usable,” at least until they are actually used once.

These force structure recommendations are particularly geared towards dealing with adversaries who possess small WMD arsenals, but their implementation would have broader implications. Effective theater missiles defenses protect US forces and allies whether engaged against an adversary with WMD or not. Enhanced offensive strike capabilities would also have widespread applications. A flexible nuclear force should be achievable without jeopardizing a force of sufficient size and shape to deter Russia.

These measures do not address the more unorthodox WMD threats from alternative delivery systems (non-missile and non-bomber) as well as alternative actors such as WMD-armed non-state groups. These groups are extremely difficult to coerce in traditional, military terms and essentially must be defended against. Resources spent on this goal must essentially be traded off against capabilities to coerce WMD-armed states. Considering how to meet these challenges is important especially if the US becomes more effective at deterring WMD-armed states, but they are beyond the scope of this project.

### *Final Thoughts*

Ultimately, adversary possession of WMD complicates US coercion efforts. As the recommended strategy outlines deterring an adversary's ability to threaten or actually use WMD represents the best way to address this challenge. Achieving such deterrence requires paying close attention to adversary perceptions and risk calculations. It is not enough to obtain capability and even possess commitment. Rather, the US must convince the adversary of this capability and commitment, thereby achieving credibility. Understanding and influencing adversary perceptions requires attention to the particular context of a coercion attempt including important regional and state-specific considerations.<sup>54</sup> The US should still be able to exert significant coercion in the world, but when facing adversaries with WMD it needs to be circumspect about which challenges to adopt, especially given the negative perceived precedents that result from failures.

---

<sup>54</sup> The supporting documents attached to this report provide considerable data and analyses on key WMD states in the Middle East, Persian Gulf, South Asia, and East Asia.



## SELECTED BIBLIOGRAPHY

### INTERVIEWS

- Bajpai, Kanti, Visiting Fellow, Foreign Policy Studies Department, The Brookings Institution, Washington, DC. Interview by DFI, December 13, 2000.
- Carus, Seth, Senior Research Professor, National Defense University, Washington, DC. Interview by DFI, December 14, 2000.
- Christensen, Thomas J., Associate Professor, Political Science Department, Massachusetts Institute of Technology, Cambridge, MA. Interview by DFI, September 25, 2000.
- Manning, Robert A., Director, Asia Studies, Studies Department, Council on Foreign Relations, Washington, D.C. Interview by DFI, December 14, 2000.
- Miller, Steven E., Director, International Security Program, Belfer Center for Science and International Affairs, JFK School of Government, Harvard University, Cambridge, MA. Interview by DFI, September 25, 2000.
- Pinkston, Daniel, Senior Research Associate, Center for Nonproliferation Studies, Monterey Institute for International Studies, Monterey, CA. Interview by DFI, December 5, 2000.
- Posen, Barry R., Professor, Political Science, Massachusetts Institute of Technology, Cambridge, MA. Interview by DFI, October 25, 2000.
- Sagan, Scott D., Co-Director, Center for International Security and Cooperation, Stanford University Stanford, CA. Interview by DFI, December 6, 2000.
- Sands, Amy, Deputy Director, Center for Nonproliferation Studies, Monterey Institute for International Studies, Monterey, CA. Interview by DFI, December 5, 2000.
- Tarzi, Amin, Senior Research Associate, Center for Nonproliferation Studies, Monterey Institute for International Studies, Monterey, CA. Interview by DFI, December 5, 2000.
- Van Evera, Steven, Professor, Political Science, Massachusetts Institute of Technology, Cambridge, MA. Interview by DFI, October 26, 2000.
- Wilkening, Dean, Director, Science Program, Center for International Security and Cooperation, Stanford University, Stanford, CA. Interview by DFI, December 6, 2000.



**SECONDARY MATERIEL**

- Arkin, William M. "Calculated Ambiguity: Nuclear Weapons and the Gulf War," *Washington Quarterly* 19 (Fall 1996).
- Betts, Richard K., "What Will it Take to Deter the United States?" *Parameters* 25 (Winter 1995).
- Binnendijk, Hans and James Goodby. *Transforming Nuclear Deterrence*. (Washington, D.C.: National Defense University Press, 1997).
- Blechman, Barry and Robert Joseph. "Deterring Chemical and Biological Weapons," in *Transforming Nuclear Deterrence*, Hans Binnendijk and James Goodby (eds). (Washington, DC: National Defense University Press, 1997).
- Brecher, Michael, B. Steinberg, and J. Stein. "A Framework for Research on Foreign Policy Behavior." *Journal of Conflict Resolution*. (Vol. 13, No. 1, March 1969).
- Byman, Daniel L. and Matthew Waxman, "Defeating US Coercion," *Survival* 41 (Summer 1999).
- Byman, Daniel L., Matthew C. Waxman and Eric Larson. *Air Power As A Coercive Instrument*. (Santa Monica, CA: RAND, 1999).
- Chandler, Robert W with John R. Backschies. *The New Face of War: Weapons of Mass Destruction and the Revitalization of America's Transoceanic Military Strategy*. (McLean, VA: AMCODA Press, 1998).
- Chandler, Robert W. with Ronald J. Trees. *Tomorrow's War, Today's Decision: Iraqi Weapons of Mass Destruction and the Implications of WMD-Armed Adversaries for Future Military Strategy*. (McLean, VA: AMCODA Press, 1996).
- Davis, Paul K. and John Arquilla. *Deterring or Coercing Opponents in Crisis: Lessons from the War with Saddam Hussein*. (Santa Monica, CA: RAND, 1991).
- Falkenrath, Richard A., Robert D. Newman, and Bradley A. Thayer. *America's Achilles Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*. (Cambridge, MA and London: MIT Press, 1999).
- George, Alexander L. and Richard Smoke. *Deterrence in American Foreign Policy: Theory and Practice*. (New York, NY: Columbia University Press, 1974).
- Gray, Colin S., "Deterrence and Regional Conflict: Hopes, Fallacies, and 'Fixes'," in *Comparative Strategy*. Taylor and Francis 1998.

Haselkorn, Avigdor. *The Continuing Storm: Iraq, Poisonous Weapons, and Deterrence*. (New Haven, CT: Yale University Press, 1999).

Hopf, Ted. *Peripheral Visions: Deterrence Theory and American Foreign Policy in the Third World, 1965-1990*. (Ann Arbor, MI: University of Michigan, 1994).

"Impact of Chemical/Biological Threats on Pre-Positioned Logistics Operations." a study by DFI International for the US Defense Threat Reduction Agency, Advanced Systems and Concepts Office (July 1999).

Jervis, Robert. *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon*. (Ithaca, NY: Cornell University Press, 1989).

Johnson, Stuart E. ed. *The Niche Threat: Deterring the Use of Chemical and Biological Weapons*. (Washington, D.C.: National Defense University Press, 1997).

Johnston, Alastair Iain. "Thinking About Strategic Culture." *International Security*. (Vol. 19, Spring 1995).

Joseph, Robert G. and John F. Reichart. *Deterrence and Defense in a Nuclear, Biological, and Chemical Environment*. (Washington, D.C.: Center for Counterproliferation Research, National Defense University Press, 1999).

Lambeth, Benjamin S. *The Transformation of American Air Power*. (Ithaca, NY: Cornell University Press, 2000).

Lavoy, Peter R., Scott D. Sagan, and James J. Wirtz, eds. *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons*. (Ithaca, NY: Cornell University Press, 2000).

Morgan, Patrick M. *Deterrence: A Conceptual Analysis*. (Beverly Hills, CA: Sage Press, 1977).

Pape, Robert A. *Bombing To Win: Air Power and Coercion in War*. (Ithaca, NY and London: Cornell University Press, 1996).

Payne, Keith B. *Deterrence in the Second Nuclear Age*. (Lexington, KY: University Press of Kentucky, 1996).

Perkovich, George. *India's Nuclear Bomb: The Impact on Global Proliferation*. (Berkeley, CA: University of California Press, 1999).

*Post-Cold War Conflict Deterrence*. Naval Studies Board, Commission on Physical Sciences, Mathematics, and Applications, National Research Council. (Washington, DC: National Academy Press, 1997).

Ritcheson, Philip Luethi. "Deterring Smaller Regional Powers Armed with Weapons of Mass Destruction: Policy Problems and Operational Prospects." Ph.D. Dissertation, Fletcher School of Law and Diplomacy (Tufts University), 1998.

Schelling, Thomas C. *Arms and Influence*. (New Haven, CT: Yale University Press, 1966).

Spiers, Edward M. *Weapons of Mass Destruction: Prospects for Proliferation*. (New York: St. Martin's Press, 2000).

Utgoff, Victor A., ed. *The Coming Crisis: Nuclear Proliferation, US Interests, and World Order*. (Cambridge, MA: MIT Press, 2000).

Watman, Kenneth and Dean Wilkening. *Nuclear Deterrence in a Regional Context*. (Santa Monica, CA: RAND, 1995).

Weaver, Greg and J. David Glaes. *Inviting Disaster: How Weapons of Mass Destruction Undermine U.S. Strategy for Projecting Military Power*. (McLean, VA: AMCODA Press, 1997).

Younger, Stephen. "Nuclear Weapons in the 21<sup>st</sup> Century." (Los Alamos, NM: Los Alamos Laboratory, July 21, 2000).